

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claims 1. - 3. (Cancelled)

Claim 4. (Currently amended) A computer implemented method for arranging polymers for combinatorial synthesis of ~~[[said]]the~~ polymers on a substrate comprising:

~~reducing edge count between said polymers comprising:~~

~~obtaining a list of polymers to be synthesized on the substrate; and~~

~~dividing ~~[[said]]the~~ polymers to be synthesized on the substrate into a plurality of~~

~~unassigned blocks, wherein each of ~~[[said]]the~~ unassigned block of the plurality of~~

~~unassigned blocks comprises~~[[ing]]~~ one or more related polymers from the other~~

~~unassigned blocks.~~

~~assigning wherein each of ~~[[said]]the~~ unassigned block~~[[s is to be assigned]]~~ to an empty~~

~~[[one]] slot on ~~[[said]]the~~ substrate~~[[; and]]~~ for synthesis by minimizing edge count~~

~~comprising:~~

~~selecting a subset of ~~[[said]]the~~ blocks from the plurality of unassigned blocks; and~~

~~assigning one selected block of ~~[[said]]the~~ unassigned blocks in ~~[[said]]the~~ subset to~~

~~[[an]]the empty slot, wherein ~~[[said]]the~~ one assigned block creates an arrangement of the~~

~~polymers is the best fitting and result~~[[s]]ing~~ in a least edge count among ~~[[said]]the~~~~

~~blocks of said subset of blocks.~~

Claim 5. (Currently amended) The method of claim 4 further comprising repeating [[said]]the steps of selecting and assigning each unassigned block to an empty slot on the substrate for synthesis by minimizing edge count until all blocks are assigned.

Claim 6. (Currently amended) The method of claim 5 wherein [[said]]the assigning each unassigned block to an empty slot on the substrate for synthesis by minimizing edge count slot further comprises:

computing a plurality of edge counts[, each of said edge counts represents the result of assigning one block of said subset to said empty slot]] after placing each assigned block into the empty slot; and

comparing [[said]]the edge counts from each assigned block and choosing the assigned block that and selecting said best-fitting block, wherein said best-fitting block has

[[said]]the least edge count.

Claim 7. (Currently amended) The method of claim 6 wherein [[said]]the unassigned blocks are ordered randomly and [[said]]the selecting step comprises first selecting the [first] subset among unassigned blocks.

Claim 8. (Currently amended) The method of claim 7 wherein the last of [[said]]the subsets of unassigned blocks has no more than 100 blocks and ~~other said-subset~~ the created arrangement of the polymers has at least 20 blocks and no more than 100 blocks.

Claim 9. (Currently amended) The method of claim 7 wherein the last of [[said]]the subsets of unassigned blocks has no more than 1000 blocks and ~~other said-subset~~ the created arrangement of the polymers has at least 100 blocks and no more than 1000 blocks.

Claim 10. (Currently amended) The method of claim 7 wherein the last of [[said]]the

subsets of unassigned blocks has no more than 10000 blocks and ~~other said subset~~ the created arrangement of the polymers has at least 1000 blocks and no more than 10000 blocks.

Claim 11. (Currently Amended) The method of claim 7 further comprising synthesizing the arrangement of the polymers of all the assigned blocks wherein ~~[[said]]~~ the polymers are oligonucleotides.

Claim 12. (Currently Amended) The method of claim 11 wherein ~~[[said]]~~ the combinatorial synthesis is radiation directed synthesis.

Claim 13. (Currently Amended) The method of claim 12 wherein ~~[[said]]~~ the radiation directed synthesis comprises steps of controlling irradiation to active synthesis site using a mask.

Claim 14. (Currently Amended) The method of claim 13 wherein ~~[[said]]~~ the edge count is a weighted edge count taking into account distance to cell leaking radiation.

Claims 15. - 24. (Cancelled)

Claim 25. (Currently amended) A computer software product for arranging polymers for combinatorial synthesis of ~~[[said]]~~ the polymers on a substrate comprising:

~~code for reducing edge count between said polymers comprising~~

code for obtaining a list of polymers to be synthesized; and

code for dividing ~~[[said]]~~ the polymers to be synthesized on the substrate into a plurality of unassigned blocks, wherein each of ~~[[said]]~~ the unassigned blocks of the plurality of unassigned blocks comprises one or more related polymers from the other unassigned blocks, and

code for assigning wherein each of [[said]]the unassigned block[[s is to be assigned]] to an empty[[one]] slot on [[said]]the substrate[; and]] for synthesis by minimizing edge count comprising:

code for selecting a subset of [[said]]the blocks from the plurality of unassigned blocks; and code for assigning one selected block of [[said]]the unassigned blocks in [[said]]the subset to [[an]]the empty slot, wherein[[said]]the one assigned block[[is the best fitting and]] creates an arrangement of the polymers result[[s]]ing in a least edge count among [[said]]the ~~blocks of said~~ subset of the blocks; and a computer readable medium for storing saidthe code.

Claim 26. (Currently amended) The computer software product of claim 25 further comprising code for repeating execution of [[said]]the codes of selecting and assigning each unassigned block to an empty slot on the substrate for synthesis by minimizing edge count until all blocks are assigned.

Claim 27. (Currently amended) The computer software product of claim 26 wherein [[said]]the code for assigning comprises: code for computing a plurality of edge counts, each of [[said]]the edge counts represents the result of assigning one block of [[said]]the subset to [[said]]the empty slot; and code for comparing [[said]]the edge counts and selecting [[said]]a best fitting block, wherein [[said]]the best fitting block has [[said]]the least edge count.

Claim 28. (Currently amended) The computer software product of claim 27 wherein [[said]]the blocks are ordered randomly and [[said]]the code for selecting comprises code for selecting the first subset among unassigned blocks.

Claim 29. (Currently amended) The computer software product of claim 28 wherein the

last of ~~[[said]]~~the subsets of unassigned blocks has no more than 100 blocks and ~~other~~  
~~said-subset~~ the created arrangement of the polymers has at least 20 blocks and no more  
than 100 blocks.

Claim 30. (Currently amended) The computer software product of claim 28 wherein the  
last of ~~[[said]]~~the subset of unassigned blocks has no more than 1000 blocks and ~~other~~  
~~said-subset~~ the created arrangement of the polymers has at least 100 blocks and no more  
than 1000 blocks.

Claim 31. (Currently amended) The computer software product of claim 28 wherein the  
last of ~~[[said]]~~the subsets of unassigned blocks has no more than 10000 blocks and ~~other~~  
~~said-subset~~ the created arrangement of the polymers has at least 1000 blocks and no more  
than 10000 blocks.

Claim 32. (Currently amended) The computer software product of claim 28 further  
comprising code for inputting size of the subsets.

Claim 33. (Currently amended) The computer software product of claim 28 wherein  
~~[[said]]~~the edge count is a weighted edge count taking into account distance to cell  
leaking radiation.

Claims 34. – 40. (Cancelled).